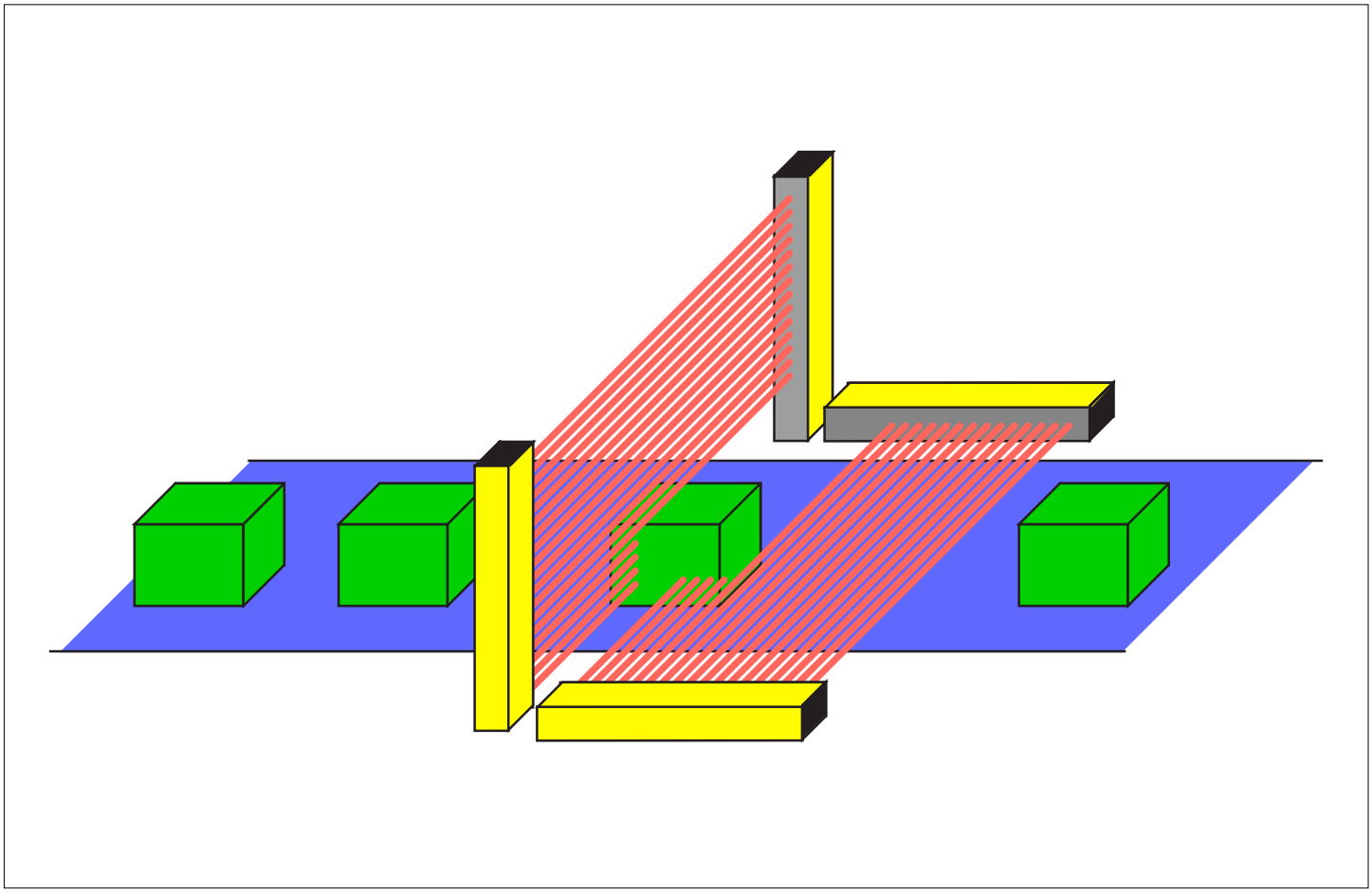
Scanning Light Curtain

MLVT



Parallel scanning - therefore no error of measurement

Sensor-Range up to 1,9 m x 7 m, beam spacing 7,5 mm (0,29 in.)

Scan length in 100 mm (3,94 in.) steps

High speed scanning, reaction time 1,2 ms

Serial Communications - SPS or IPC

Optional integrated Profibus-DP output

DIN EN ISO 9001
Reg.Nr. 96007

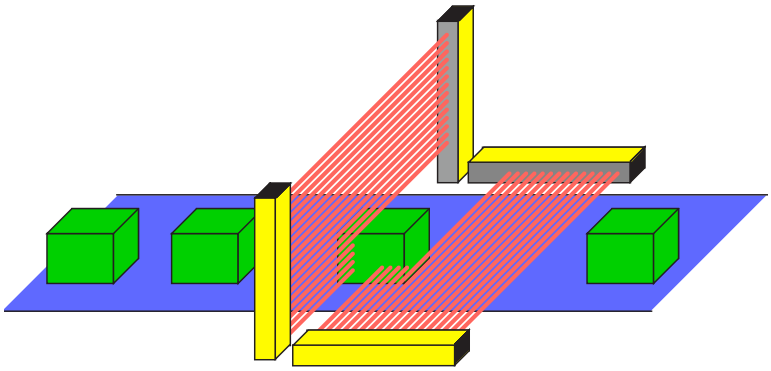
CE

Application:

The scanning light curtain **MLVT** is used for measuring non-transparent objects.
Thanks to the parallel scanning method, there is no error of measurement.

With a beam spacing of 7,5 mm (0,29 in.) and a huge scanning field of max. 1900mm (74,80 in.) X 24m (944,88 in.) this light curtain can be used very flexibly for many applications.
Applications of the **MLVT** are:
Measurement of length, volume, holes, loops .....

paint shops - **controlling of the spray guns**
assembly lines - **assorting of cardboard boxes**
wood industries - **classification of tree circumferences**

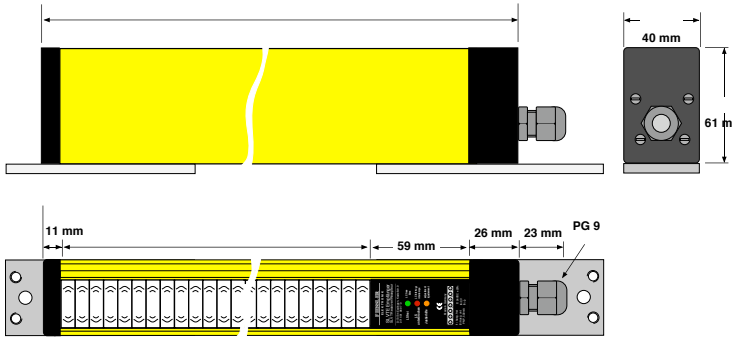


Measuring of box volumes

Features

The scanning light curtains MLVT are characterized by the following features:

- beamspacing only 7,5 mm (0,29 inch)
- **high speed scanning** only 1,2 ms up to 10,3 ms, depending on length
- scanning length 100 mm up to 1900 mm in steps of 100 mm
- **small guards / valves directly connectable**, 2 short-circuit-safe non-equivalent semiconductor outputs, PNP, connecting capacity 0,5A/24V
- **protective system IP 65**
- **operating range 7m (7,5mm beam space)**
- **operating range 24m (14mm beam space)**
- **Serial Communications (RS 458) for IPC or SPS** interface converter (optionally available as accessory)



Construction

The system MLVT consists of two components: transmitter and receiver. Their detection ranges and heights are defined by the distance between both transmitter and receiver and by their constructional lengths.
Due to the modular design of the components, there-are sensor field heights from 100 mm through 1900 mm availablabe. On demand, the construction of special dimensions units for intermediate-sized applications is possible.

Function

The transmitter generates infrared light beams which are continuously flashing at high speed. The parallel light beams (beam spacing 7,5mm) are evaluated in the receiver in synchronous action with the transmitter.
The diodes are checked one after the other whether all beams are free or if there is any obstacle. By doing this, a verification of the current status of all diodes is realized. Via a serial interface, these data can be processed further. If there is an object in the detection field, both receiver outputs are activated.

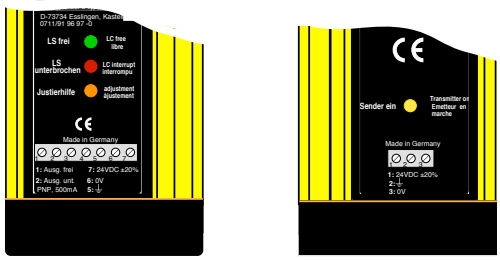
		beam space 7,5 mm		beams space14 mm	
sensor field heights/ no. of beams mm	over all-length mm	**Order no.** max range 7 m	* max. reac-tion time m/s	**Order no.** max. range 24 m	* max. reac-tion time m/s
100	196	**MLVT100 / 13**	1,2	**MLVT100 / 7**	1
200	296	**MLVT200 / 26**	1,7	**MLVT200 / 14**	1,3
300	396	**MLVT300 / 39**	2,2	**MLVT300 / 21**	1,6
400	496	**MLVT400 / 52**	2,7	**MLVT400 / 28**	1,8
500	596	**MLVT500 / 65**	3,2	**MLVT500 / 35**	2
600	696	**MLVT600 / 78**	3,7	**MLVT600 / 42**	2,4
700	796	**MLVT700 / 91**	4,2	**MLVT700 / 47**	2,7
800	896	**MLVT800 / 104**	4,7	**MLVT800 / 56**	2,9
900	996	**MLVT900 / 117**	5,2	**MLVT900 / 63**	3,2
1000	1096	**MLVT1000 / 130**	5,7	**MLVT1000 / 70**	3,5
1100	1196	**MLVT1100 / 143**	6,2	**MLVT1100 / 77**	3,8
1200	1296	**MLVT1200 / 156**	6,7	**MLVT1200 / 84**	4
1300	1396	**MLVT1300 / 169**	7,2	**MLVT1300 / 91**	4,3
1400	1496	**MLVT1400 / 182**	7,8	**MLVT1400 / 98**	4,6
1500	1596	**MLVT1500 / 195**	8,3	**MLVT1500 / 105**	4,8
1600	1696	**MLVT1600 / 208**	8,8	**MLVT1600 / 112**	5,1
1700	1796	**MLVT1700 / 221**	9,3	**MLVT1700 / 119**	5,4
1800	1896	**MLVT1800 / 234**	9,8	**MLVT1800 / 126**	5,7
1900	1996	**MLVT1900 / 247**	10,3	**MLVT1900 / 133**	5,9

* max. detection and reaction time = Minimum sojourn time of the object in the sensor field until the reaction of outputs.

communication

Serial RS-485 port, optional integrated profibus output. Simple and easy-to-handle connection to other communication devices. These scanning curtains can be optionally connected via an external converter to an RS 232 C-interface or to a profibus-DP field bus.

On reception of a demanding signal issued by the computer or by the SPS, the receiver emits the number of the darkened emitting diodes (or light beams) in binary code (polling). As demand signal, any byte issued from the PC or the SPS will suffice. The transmission Parameters are: 9600, N, 8, 1 (Baud, No Parity, Databits, Stopbit)
For special applications , the suitable software will be available on demand.

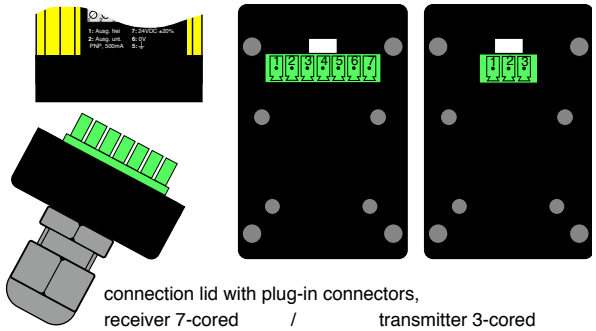


LED-displays

The respective operational mode is indicated by several LEDs on the receiver front plate. Therefore, any interruption of the sensor area, or any dirt or faulty adjustment of the transmitter/or receiver can be easily detected .
After switching on the system, both transmitter and receiver must be adjusted in a way that the green LED "free" lights up and the red LED "off" does not light up. In order to guarantee sufficient reserve, the orange LED "alignment gear" should not light up.

Integrated plug-in connection in the connection lid

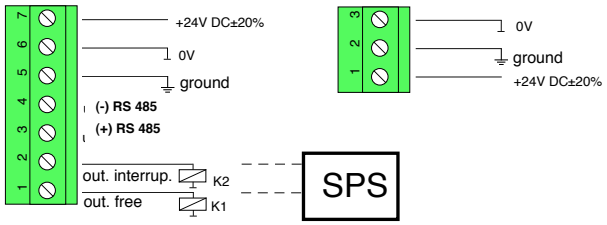
The standard of the product series MLVT includes an extra flat plug-in connection located in the connection lid. This lid may be removed without cutting the connection cable plug. The housing itself remains tightly closed.
There are various standard connection plugs availabe. The connection of the transmitter is realized by a 3-core cable, the receiver by a 7-core cable.



connection lid with plug-in connectors,
receiver 7-cored / transmitter 3-cored

Connection

The connection is made following the enclosed diagrams. The non-equivalent PNP-ports are short-circuit-safe and can be connected and evaluated independently from each other.
The switching capacity of 0,5A/24V permits the direct connection of small guards, relays or SPS.
If the sensor field is free, the PNP port "free" is conducting and the PNP port "interrupted" is not conducting.
If the sensor field is interrupted, the SPS port "interrupted" is conducting and the PNP port "free" is not conducting.
Serial port RS458: 2-core cable simplex connection
Connection 3 is A (+) connection 4 is B(-).

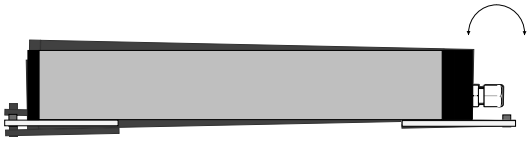


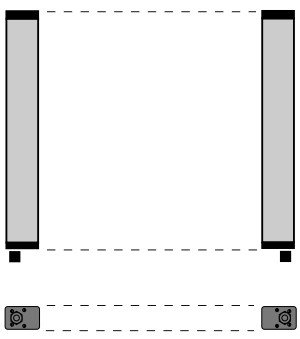
Mounting transmitter and receiver

Please make sure that the plugs of both transmitter and receiver are located at the same side of the units. They have to be aligned parallel to each other.
<u>In order to swivel around the longitudinal axis:</u> turn one single adjustment screw on one fastening clip, while loosening both adjustment screws on the other clip.
<u>In order to swivel around the lateral axis:</u> turn both adjustment screw evenly on one fastening clip, while loosening both screws on the other clip.

Longitudinal axis

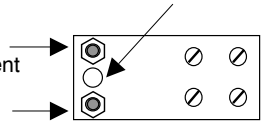
Lateral axis





7 mm diameter hole for fastening

adjustment screws with lock nuts for swivel movement around longitudinal / lateral axis



characteristic data	MLVTS... / MLVTE...	
sensor field heights	100 mm ... 1900 mm (according to number of beams)	
sensor field widths (range)	0,1... 7 m	
contructional lengths	196 mm ... 1996 mm (according to number of beams)	
definition	detection of smallest obstacles (14 mm)	
number of beams	13... 247 beams	
detection/reaction time	max. detection and reaction time = Minimum sojourn time of the object in the detection field until the reaction of outputs: see table on page 2	
Mechanical data		
Housing design	Aluminum-profile, plastic laminated RAL 1020 yellow, end pieces consist of acidproof synthetic (Polyamide) reinforced by glass globes. Light ermerging and detection areas made from plexiglass, optional solventproof silikate glass.	
attachment	Adjustable fixing link on backof housing	
weight	Transmitter: 0,45 kg up to 4,5 kg according to constructional height Receiver: 0,5 kg up to 5,0 kg according to constructional height	
Operating data		
Protective System	IP 65	
Protective class	III	
Temperature of operationa	between -10 and 55 °C	
Storing temperature	between -25 and 70 °C	
Electric data	**Transmitter MLVTS**	**Receiver MLVTE**
Voltage	24 V DC SELV, ±20 %	24 V DC SELV, ±20%,
Power consumption	max. 200 mA	max. 200 mA (at no charge)
Outputs (Receiver)	-	outputs"free" and "interrupted": PNP-outputs, short-circuit-safe, max. 0,5 A RS-485 (+) and (-)
Electrical connection	integrated plug-in connector with PG9 as traction relief. Alternative: custom made connection plugs	integrated plug-in connector with PG9 as traction relief. Alternative: custom made connection plugs
Cables	3-cored, max. 1,5 mm^2	5-cored, max. 1,5 mm^2